

What Is Claimed Is:

1. A torque detection device for a wave gearing, which detects torque transmitted through a flexible external gear of the wave, comprising:

5 at least one strain gauge unit mounted on a surface of the flexible external gear,

a bridge circuit constituted by the strain gauge unit, and

a signal processing circuit for detecting the torque on the basis of output signals from the bridge circuit, wherein

10 the strain gauge unit has a strain gauge pattern including at least one detection segment made from resistance wire, and wherein

the detection segment is formed to have a prescribed shape of a grid pattern formed by portions of the resistance wire arranged at regular intervals.

2. The torque detection device for a wave gearing according to claim 1, wherein the detection segment has a circular arc shape of 360°.

20 3. The torque detection device for a wave gearing according to claim 1, comprising a composite strain gauge unit which has a first strain gauge unit formed with a first detection segment having a circular arc shape of 360° and a second strain gauge unit formed with a second detection

25 segment having a circular arc shape of 360°,

the grid pattern of the resistance wire for the first detection segment has portions arranged at equal intervals and along a direction inclined by 45 degrees with respect to a tangential direction of the circular arc shape,

5 the grid pattern of the resistance wire for the second detection segment has portions arranged at equal intervals and along a direction inclined by 45 degrees with respect to a tangential direction of the circular arc shape, and

the first and second strain gauge units are superposed  
10 together so that said portions of the respective grid patterns thereof intersect perpendicularly with each other.

4. The torque detection device for a wave gearing according to claim 1, wherein the strain gauge pattern of the strain gauge unit includes two detection segments having  
15 circular arc shapes of  $180^\circ$ .

5. The torque detection device for a wave gearing according to claim 1, wherein the strain gauge pattern of the strain gauge unit includes four successive detection segments having circular arc shapes of  $90^\circ$ .

20 6. The torque detection device for a wave gearing according to claim 1, wherein the strain gauge pattern of the strain gauge unit comprises at least three detection segments having circular arc shapes of  $45^\circ$ .

7. The torque detection device for a wave gearing  
according to any of claims 1 to 6, wherein the strain gauge  
pattern of the strain gauge unit includes a wiring pattern for  
connecting a plurality of the detection segments to each other  
5 so that the bridge circuit is constituted, and wherein  
the detection segments and the wiring pattern are  
integrally formed.